



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/612,071	07/03/2003	Uwe Schulze	23776US0X	3520

22850 7590 06/16/2005

OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.  
1940 DUKE STREET  
ALEXANDRIA, VA 22314

EXAMINER
----------

WU, IVES J

ART UNIT	PAPER NUMBER
----------	--------------

1713

DATE MAILED: 06/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/612,071	<b>Applicant(s)</b> SCHULZE, UWE	
	<b>Examiner</b> Ives Wu	<b>Art Unit</b> 1713	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

**A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.**

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 April 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☒ Claim(s) 1,5,7 and 14,19 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>09/08/2003</u> | 6) <input type="checkbox"/> Other: _____  |

15

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1,5,7,14,19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 & 14 cite: "with C<sub>1</sub> – C<sub>18</sub> aryl" in each of Makush Group consisting of compounds of formulae A) to F), the carbon atoms of aryl is ranged from 6 at least. It would be proper to cite: "with C<sub>6</sub>-C<sub>18</sub> aryl".

Claims 5 & 19 cite: "The polymer latex as claimed in claim 1, wherein the component c) is an **ethylenically unsaturated carboxylic acid**".

Because only acrylate monomers are cited in component C) in claim 1, the ethylenically unsaturated carboxylic acid addressed in claim 5 as component C) in claim 1 again would cause indefinite since ethylenically unsaturated carboxylic acid and acrylate monomer are different.

Claim 7 cites: The polymer latex as claimed in claim 1, comprising 1 – 20% by weight of component c) which is **nitrile monomer alone or mixture of nitrile monomers**.

Art Unit: 1713

Because only acrylate monomers are cited in component C) in claim 1, the nitrile monomer addressed in claim 7 as component C) in claim 1 again would cause indefinite since nitrile monomer and acrylate monomer are different.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1,2,5,6,7,8,9,10,11,14,15,16,19,20 are rejected under 35

U.S.C. 102(b) as being anticipated by Stollmaier et al (US005837762A).

As to **component A)** of polymer latex composition in **independent claim 1**, Stollmaier et al (US005837762A) disclose as cited: in one aspect, the present invention is a polymer latex composition, in polymerized form, (A) from **10 wt% - 80 wt%** of **monovinylidene aromatic monomer(s)**, Col. 1, line 24-36.

As to **component B)** of polymer latex composition in **independent claim 1**, Stollmaier et al (US005837762A) disclose as cited: (B) from **0 wt% - 65 wt%** of **conjugated diene monomer(s)** Col. 1, line 24-36.

Art Unit: 1713

As to **component C)** of polymer latex composition in **independent claim 1**, Stollmaier et al (US005837762A) disclose as cited: (C) from **0 wt% - 70 wt%** of **acrylate monomer(s)** Col. 1, line 24-36.

As to **component D)** of polymer latex composition in **independent claim 1**, Stollmaier et al (US005837762A) disclose as cited: (D) the remaining amount of other polymerizable comonomer(s); with the proviso that the combined weight percentage of components (B) and (C) is greater than **zero**, Col. 1, line 24-36.

As to **chain transfer agent** of polymer latex composition in **independent claim 1**, Stollmaier et al (US005837762A) disclose as cited: wherein the sulfur- and halogen-free chain transfer agent is an abietic acid-containing rosin, Col. 1, line 24-36; also the formula of abietic acid is  $C_{19}H_{29}COOH$  having a phenanthrene ring  $C_{14}H_{10}$ , it is one of the hydroperoxides, in other words, it is selected from group consisting of compounds of formula A) to F).

As to the glass transition temperature of polymer latex in **independent claim 1**, Stollmaier et al (US005837762A) disclose as cited: the present invention is a polymer latex composition having a glass transition temperature between **-10 °C and 70 °C**, Col. 1, line 24-36.

Art Unit: 1713

As to the limitation of **dependent claim 2**, Stollmaier et al (US005837762A) disclose abietic acid as chain transfer agent, and also abietic acid is one of the hydroperoxides.

As to **component a) of dependent claim 5**, Stollmaier et al (US005837762A) disclose representative monovinylidene aromatic monomers including, for example, **styrene**, Col. 2, line 18-19.

As to **component b) of dependent claim 5**, Stollmaier et al (US005837762A) disclose conjugated diene monomers including, for example, **1,3-butadiene**, Col. 2, line 28-30.

As to **component c) of dependent claim 5**, Stollmaier et al (US005837762A) disclose other polymerizable comonomers including, for example, **ethylenically unsaturated carboxylic monomers**, Col. 3, line 11-13.

As to the limitation of **dependent claim 6**, Stollmaier et al (US005837762A) disclose by citing: In one embodiment, the polymer latex composition of the present invention comprises **styrene, butadiene**, itaconic acid, **acrylic acid**, and gum rosin chain transfer agent, Col. 4, line 31-33.

As to the limitation of **dependent claim 7**, Stollmaier et al (US005837762A) disclose by citing: This nitrile monomer (if used) can be included in amounts up to about **25 parts by weight, preferably 0 – 15**

Art Unit: 1713

**parts by weight, based on 100 total weight parts of monomers,**

Col. 3, line 44-47.

As to the limitation of **dependent claim 8**, Stollmaier et al disclose by citing: Such nitrile monomers include, for example, **acrylonitrile**, Col. 3, line 42-43.

As to the component **styrene** in the polymer latex in **dependent claim 9**, Stollmaier et al disclose representative monovinylidene aromatic monomers including, for example, **styrene**, Col. 2, line 18-19.

As to the component **butadiene** in the polymer latex in **dependent claim 9**, Stollmaier et al disclose conjugated diene monomers including, for example, **1,3-butadiene**, Col. 2, line 28-30.

As to the components **acrylonitrile, acrylic acid** in the polymer latex in **dependent claim 9**, Stollmaier et al disclose by citing: As aforementioned, other polymerizable comonomers include, for examples, ethylenically unsaturated carboxylic acid monomer, nitrile monomer, Col. 3, line 11-13; Exemplary monocarboxylic acid monomers include, for example, **acrylic acid**, Col. 3, line 26-27; Such nitrile monomers include, for example, **acrylonitrile**, Col. 3, line 42-43.

As to the limitation of **dependent claim 10**, Stollmaier et al disclose by citing: The polymer latex compositions of the present invention further exhibit the

Art Unit: 1713

advantage of being of less odor than typical latex-based **paper coating**

compositions, Abstract, line 10-13.

As to the limitation of **dependent claim 11**, Stollmaier et al disclose abietic acid as chain transfer agent, and also abietic acid is one of the hydroperoxides.

As to the polymer latex compositions and its  $T_g$  in **independent claim 14**, Stollmaier et al already disclose for instant claim 1 because the same polymer latex compositions, its  $T_g$  addressed in claim 1 are recited in claim 14.

As to the **process** for preparation of a polymer latex by reacting in **independent claim 14**, Stollmaier et al disclose by citing: In general, the polymer latex composition of the present invention can be prepared by **polymerization processes** which are known in the art, and particularly by the known latex emulsion polymerization process, Col. 4, line 41-44.

As to the limitation of **dependent claim 15**, Stollmaier et al disclose by citing: Crosslinkers and the well-known latex polymerization aids such as **initiators, surfactants** and **emulsifiers** can be used as needed, Col. 4, line 54-56; a polymerization temperature between **80°C – 90°C**, Example 1, Col. 6, line 34.



Art Unit: 1713

As to the limitation of **dependent claim 16**, Stollmaier et al (US005837762A) disclose abietic acid as chain transfer agent, and abietic acid also is one of the hydroperoxides.

As to the limitation of **dependent claim 19**, Stollmaier et al disclose representative monovinylidene aromatic monomers including, for example, **styrene**, Col. 2, line 18-19.

As to **component b)** of **dependent claim 19**, Stollmaier et al disclose conjugated diene monomers including, for example, **1,3-butadiene**, Col. 2, line 28-30.

As to **component c)** of **dependent claim 19**, Stollmaier et al disclose other polymerizable comonomers including, for example, **ethylenically unsaturated carboxylic monomers**, Col. 3, line 11-13.

As to the limitation of **dependent claim 20**, Stollmaier et al disclose by citing: The abietic acid (hydroperoxide)-containing gum rosins useful in the present invention are employed in amounts of from **0.1 – 15, preferably from 1 – 10 wt parts, per 100 wt parts of total monomers**, Col. 2, line 13-17.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 1713

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 3,12,17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stollmaier et al (US005837762A) in view of Weiler et al (US20020137882A1).

As to the limitation of **dependent claims 3,12 & 17**, Stollmaier et al **do not teach** the peroxide selected from the group consisting of tert-butyl hydroperoxide, cumyl hydroperoxide and mixtures thereof.

However, Weiler et al **teach** by citing: The invention provides for the use of non-copolymerizable hydroperoxides of the general formula R-O-O-H as regulators in the free-radically initiated polymerization of ethylenically unsaturated monomers, where R is H, a C<sub>1</sub>-C<sub>18</sub> – alkyl radical, a C<sub>7</sub>-C<sub>22</sub>- aralkyl radical; [0009], line 1-5; Particular preference is given to hydrogen peroxide, **tert-butyl hydroperoxide, cumene peroxide**, [0011], line 1-2.

Art Unit: 1713

The advantage of using peroxide selected from tert-butyl hydroperoxide, cumyl hydroperoxide or mixture of both is because it is usual to employ regulators in addition to the initiator, [0004], line 4-5; also they are sulfur-free and halogen-free chain transfer agents as the environmental concerns, Col. 1, line 7-14 (Stollmaier et al US005837762A).

It would have been obvious at the time of applicant's invention to replace the Stollmaier et al's chain transfer agent – abietic acid by Weiler et al's hydroperoxides consisting of tert-butyl hydroperoxide, cumene hydroperoxide because it will achieve the advantages aforementioned. Furthermore, it is recognized that Weiler et al's teaching includes a abietic acid species for radical polymerization of those monomers, those three peroxides: abietic acid, tert-butyl hydroperoxide and cumene hydroperoxide are equivalent species of hydroperoxide with general formula R-O-O-H disclosed by Weiler et al. In view of their functional equivalent peroxides, motivated by reasonable expectation of success.

Claims 4,13,18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stollmaier et al (US005837762A) in view of Charleux et al (US006353065B1).

As to limitation of **dependent claim 4,13 &18**, Stollmaier et al **do not teach** using the organic peroxides for chain transfer agent such as di-tert-butyl peroxide, tert-butyl peroxybenzoate and tert-butyl peroxy-3,5,5-trimethylhexanoate.

Art Unit: 1713

However, Charleux et al **teach** by citing: The invention results, by a rapid controlled polymerization process, in a latex of polymer particles, it being possible for the polymer to comprise acrylate and/or methacrylate blocks,

Abstract, line 7-10; Such an initiator can be **organic peroxide** or

**hydroperoxide** and can, for example, be chosen from the following list: **di-**

**tert-butyl peroxide, tert-butyl peroxybenzoate, etc,** Col. 6, line 35-50.

It is indicated in Charleux et al teaching for the interchangeability of organic peroxide and hydroperoxide as functionally equivalent chain transfer agent in a similar polymerization process.

Thus, it would have been obvious at the time of applicant's invention to replace the Stollmaier et al's chain transfer agent – abietic acid by Charleux et al's organic peroxide selected from group consisting of di-tert-butyl peroxide, tert-butyl peroxybenzoate, etc, based on their expected interchangeability as functionally equivalent initiator, motivated by reasonable expectation of success. In re O'Farrell.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ives Wu whose telephone number is 571-272-1114. The examiner can normally be reached on 8:00 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on 571-272-1114. The fax


Art Unit: 1713

phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Examiner: Ives Wu  
Art Unit: 1713

Date: June 10, 2005

  
DAVID W. WU  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700